THE

AMERICAN JOURNAL OF PHARMACY.

SEPTEMBER, 1874.

WISTAR'S LOZENGES.

By Franklin C. Hill.

Until 1856 the manufacture of cylindrical lozenges of licorice, gum and sugar was a matter of such difficulty that few attempted it on a large scale, and the best article then produced was so badly made that it would be unsalable at this time.

The change that has come over this manufacture is due, apparently, to the machine and processes introduced by me. The machine is represented in the cut here given. The best material is black walnut, well seasoned, for the machine, and pine or poplar for the drying board, which, by the way, should be just long enough to slide in under "the board." There are two springs under the board, that catch in the notches in the ends of the drying-board, and prevent its return after it is pushed forward. The whole upper surface of the drying-board is cut with a proper plane into shallow grooves, about three-eighths of an inch wide and one-sixteenth deep. The springs must be so placed as to bring a groove under the opening between board and guard.

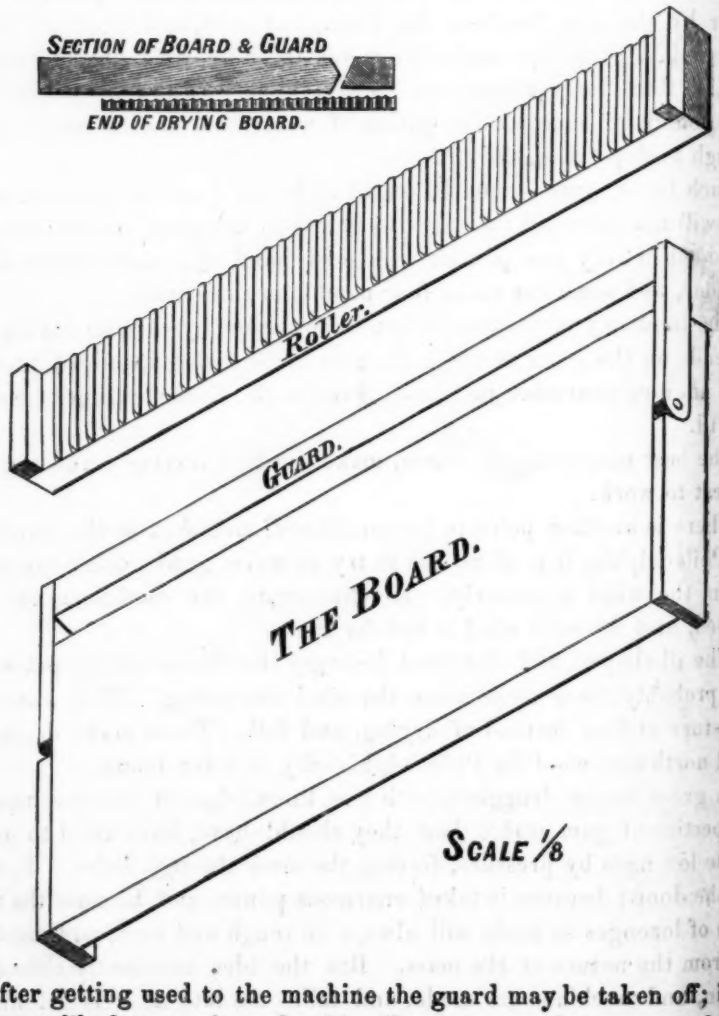
The knives of the roller are made of sheet brass let into saw kerfs cut across the wood, and the upper edges are made smooth and true. Each drying-board, of one foot width, will hold about two pounds of lozenges.

Oil the whole machine, when new, with olive oil. It is convenient to have another cutter, with knives placed say two inches apart, and standing one-half inch high.

Having mixed a mass of about one pound weight, roll it quickly with the second roller, and cut it into the right number of pieces. Then roll each piece to the full length of the board within the end cleets, mark it with the knife deeply, but take care not to cut it

through, and with the same motion carry it forward until it falls down behind the guard, and rests in one of the grooves of the dryer. With the fingers push the dryer forward one notch, and repeat.

When the lozenges are dry, shake them off, and they will snap at the marked places without any trouble.



After getting used to the machine the guard may be taken off; but I always liked to use it, and, with all respect to those now making them, be it said I turned out the best finished lozenges that have ever been in the market.

The quantity of water to be used in mixing the mass varies with

the quality of the gum used—the best gum taking the most water. The tendency of the mass to take on an elastic condition, like India rubber, which is the terror of all makers of "Wistar," is owing to the gum getting wet. If the gum can be kept dry until the lozenges are rolled, the mass is easily worked, and then the absorption of the water by the gum hardens the lozenge at once, and prevents their flattening. Therefore make the water thick by dissolving the sugar in it, so that the gum gets wet slowly. I made a syrup with seventeen pounds of sugar to the gallon of water, and used it before cold enough to deposit sugar.

Each lot of gum should be tested as to the water it will bear, and if it will not allow all the sugar to be put in as syrup, the rest should be added in very fine powder. A good hand can make two pounds an hour, and some can make four pounds in that time.

The tendency to brownness can be overcome by care in mixing; it depends on the order in which the gum and licorice are added, though I do not now remember just how. I can make them chestnut or black, at will.

The best materials, of course, make the best lozenges, and are the easiest to work.

There is another point to be considered, and that is the weather. In Philadelphia, it is of no use to try to make good round lozenges when the wind is easterly. In Cincinnati, the conditions are reversed, and the west wind is bad for them.

The ill-shaped and flattened lozenges that are so often met with, are probably those made when the wind was wrong. They absorbed moisture at first instead of drying, and fell. Those made during a cold northwest wind (in Philadelphia) dry in a few hours.

A great many druggists, with less knowledge of the mechanical properties of gum arabic than they should have, have tried to make these lozenges by pressure, forcing the mass through holes. It cannot be done; because it takes enormous power, and because the surface of lozenges so made will always be rough and torn, and must be so from the nature of the mass. But the idea constantly comes up again, and machines are made, and fail. As late as 1847 I found a sanguine inventor, working mysteriously in his back shop with closed doors, but his results have never been published. He would not allow me to see the machine, but I drew out from him the admission that he was working on the old maccaroni plan.

A friend in Philadelphia reminds me that I first suggested the making of licorice lozenges by leaving the morphia out of "Wistar." I had forgotten it, but am perfectly willing to take the credit due for keeping opiates out of the public, especially as "credit" is all the machines have ever brought me.

Yellow Springs, Ohio.

PILLS OF SULPHATE OF QUINIA.

Editor American Journal of Pharmacy:

The existing formulæ for making quinia pills have probably proved unsatisfactory to many of your readers. The process of the U. S. P. yields a rather bulky and unsightly pill. With glycerin alone as an excipient, one obtains (if fingers and tools are clean) a white, but large pill, and the mass is apt to be either crumbly or flabby. Made with dilute sulphuric acid the product is small and solid, but the mass hardens so quickly when it begins to set that it can be worked only in small batches. Recent experiments have led me to the adoption of the following method, which, after an experience of three months, and the making of some thousands of pills, I pronounce unexceptionable:

Take of Sulphate of Quinia	600 grs.
Tartaric acid, ...	100 grs.
Glycerin, pure, ...	75 minims

Rub the quinia and acid together in a mortar to a fine powder, till no appearance of crystals remains, add the glycerin—just 75 minims, no more nor less—and continue the trituration till the powder becomes adherent, when it should be beaten into proper form for handling and divided into the required number of pills. The mass is firm, solid, rolls well, does not set for some hours, is, in fact, a "beautiful mass," and the pill will be found quite small for their weight, very white, if rolled in starch powder, and however old or dry they may become, they remain perfectly and entirely soluble.

Let me repeat that the quantity of glycerin is just right, though it seems at first insufficient for such a bulk of quinia, but in connection with the tartaric acid it does the work, though requiring patient trituration. Even a very few drops of glycerin more than the proportion given will render the mass inconveniently sticky.

H. P. Reynolds.

Plainfield, N. J., August 6, 1874.

OIL FROM NUX VOMICA.

By Charles Bullock.

In the preparation of extract of nux vomica, with the intention of having the extract sufficiently hard to permit of pulverization, the hardening process was conducted in a porcelain vessel heated by a steam jacket. As the extract solidified each night on cooling, the oily matter rose to the surface, and was removed before reheating. From 150 pounds of nux vomica five pints of oil were obtained.

To ascertain whether this oil contained any notable portion of the alkaloids of nux vomica, four fluidounces of the oil was agitated with water acidulated with sulphuric acid, the water allowed to separate by long standing, and then was removed. The process of washing was repeated as long as the washings were disturbed by a solution of caustic soda.

On the addition of the soda solution to a slight excess immediate precipitation occurred, the precipitate on stirring aggregated into a wax-like mass, at the end of twenty-four hours the solution was filled with a copious gelatinous deposit. Both precipitates were collected on a filter, washed to remove the excess of alkali and treated with water acidulated with sulphuric acid until exhausted. The acid solution was neutralized with soda, the alkaloids collected on a filter, dried and dissolved in hot dilute alcohol. The alcoholic solution yielded 10·6 grains of alkaloids.

The presence of strychnia was shown by the characteristic violet color, when treated with sulphuric acid and chromate of potassium, but as the alkaloids dissolved *almost* completely in warm absolute alcohol, strychnia could only be present in small quantity, the major part being brucia.

The gelatinous matter when dry weighed 14 grains. Heated on platinum foil it remained unchanged, and was sparingly soluble in hydrochloric acid. When boiled with a solution of pure carbonate of potassium, and the filtered solution neutralized with nitric acid, the addition of nitrate of barium produced no change (absence of sulphuric and phosphoric acids). The insoluble portion remained insoluble in dilute hydrochloric acid, the precipitate was, therefore, not a salt of the alkaline earths.

A *second* portion was fused with pure caustic soda, the fused mass dissolved completely in water. To a part solution of chloride of ammonium was added, producing a copious flocculent precipitate, show-

ing the base to be alumina. To the remaining portion of the soda solution, after super-saturation with nitric acid, solution of molybdate of ammonium was added, no reaction took place, even after long standing, showing the entire absence of phosphoric acid.

Prof. J. M. Maisch has noticed the presence of earthy phosphates in nux vomica [*Amer. Journ. Pharm.*, Vol. 32, p. 524]. In this instance the phosphoric acid may have been removed by long digestion with dilute sulphuric acid and subsequent precipitation by soda.

The presence of alkaloids in the oil rendered apparent the suggestion of Prof. Procter, that, when the oil is removed, it should be agitated with a little dilute alcohol, which takes from it any adhering extractive matter. *Vide*, note to ext. nux vomica, U. S. Dispensatory.

Philadelphia, August, 1874.

THE COHESION-FIGURES OF OILS AS TESTS FOR THEIR IDENTITY AND PURITY.

By Miss Kate Crane.

Becoming interested, from articles in the *Chemical News* of 1869, in the cohesion-figures of oils as tests for their identity and purity, I was led a few weeks ago to experiment with some varieties, and upon the suggestion of a friend I submit an account of some of my work to the readers of the *American Journal of Pharmacy*.

With the comparatively few trials I have made I am convinced that a little patient practice will teach the eye in a short time to detect the characteristic differences of the figures. To make these perfect it is necessary to observe the time in forming, for at *different periods* some varieties form figures very like, but with this precaution each is entirely characteristic. It is essential that the dish used, &c., be perfectly clean, so that when filled with water no dust or lint floats upon the surface, as this materially interferes with the perfect formation of the figure.

A single drop is let fall from a burette or glass rod, held steadily about four inches above the water, upon the centre of the surface.

I experimented with a number of volatile oils, by themselves and mixed in different proportions with *oil of turpentine*.

The last-named oil, by itself, spreads instantly to the whole size of the plate, a common soup plate, and almost immediately the edge begins to break into irregular shapes, when a rapid motion takes place over

the whole surface of the film, there seems to be a contest between the cohesion of the oil particles and the adhesion between them and the water. The oil makes repeated efforts to gather itself closer together, when the water instantly reacts, giving a wavy appearance to the whole figure. The play of colors at this point is beautiful and serves to bring out the lines more perfectly. In a few seconds innumerable little holes appear over the surface, which soon are separated only by threaded lines, and the figure is like the most exquisitely fine lace.

Oil of cinnamon forms a figure not more than half the size of the last named. In a few seconds small portions are detached, and shortly separates into distinct drops, four or five larger and a number of smaller ones, scattered about. With mixtures in different proportions of *oil of turpentine*, the figures formed differently, taking more the characteristics of the adulterant as it predominated.

Oil of nutmeg forms a large figure instantly, the edge showing a beaded line. It gathers itself together and spreads again, very like oil of turpentine, but the surface presents more the appearance of watered silk. Within 60 seconds some holes appear, and in 80 more the surface is covered with them; these scarcely spread to more than a sixteenth of an inch in diameter, but from the first each is bordered with a dotted edge. The figure lasts some time without changing materially, except the openings lengthen out into an oblong shape, remaining entirely distinct. The play of colors is very fine. With the addition of one-third the volume of *oil of turpentine*, the first spreading is little different, but openings appear in half the time and the dotted border does not come as soon; in about four minutes the figure is most characteristically marked, and soon breaks up entirely, this being the distinctive difference between the pure oil and the mixture.

Oil of peppermint spreads instantly to a large figure, and in ten or fifteen seconds openings appear, which increase rapidly in size; at first they look some like the last named, but are not nearly so numerous, and the border soon is more like tiny drops. In one and a half or two minutes they begin to run together and the figure breaks up. With the addition of *turpentine oil* the figure forms more slowly, and the breaking up is less rapid, but in five minutes the outlines only remain.

Oil of bergamot spreads instantly, in 30 seconds tiny openings appear, not very abundant, and increase in size slowly; in five minutes they

are not larger than oil of nutmeg at one and a half minutes. At first they have a dotted border, but as they increase in size this changes to a scalloped film, which spreads until, in eight or ten minutes, they are joined together over the whole surface.

This, with *turpentine oil*, gives a watered surface in spreading, much more marked and with a finer play of colors.

Experiments with fixed oils are as follows: *poppy-seed oil* spreads instantly to a large figure, retaining an entire outline, and for a few seconds the surface is unbroken, except the bare intimation of a beaded edge. In a few moments little holes appear around the edge and soon the whole surface is broken in like manner, these increase in size very slowly. In fifteen minutes the edge begins to open forming indentations, which gradually work their way across the figure. As they increase in length these begin to curve, and in three-quarters of an hour have doubled themselves two or three times.

Cod liver oil spreads in a large film; a little way from the edge a row of small holes appear, and in a minute or two the surface is covered with them; these gradually enlarge, assuming irregular shapes, soon separated by branching lines.

Cod-liver oil with *lard oil* spreads very like the former, but in a few moments the edge opens and the film separates partly across, in a moment one of the projecting points begins to curve itself towards the centre, bending more and more until it forms a coil. Meanwhile a few holes have appeared, which spread irregularly, throwing out projecting points.

Castor oil spreads instantly, the edge remaining entire; openings appear thickly in thirty seconds and increase gradually, but unevenly, those nearer the edge being larger, and lengthening out irregularly as they spread. The figure lasts some time. *Castor* with a little *lard oil* makes a smaller figure, and not nearly so much broken, in five minutes the holes open into each other and the figure breaks up from the edge.

A mixture of *castor* and *poppy-seed oils* spreads to form a lace-work border, but smoothes out to an entire edge soon, and within a few seconds openings appear. The figure in size and general appearance is more like castor oil alone, but the holes spread less uniformly in a given time, a few being larger, but the greater portion much smaller. In fifteen minutes there is a general tendency to break up.

Castor with a little *croton oil* throws out a spray, which in a few

moments unites into a thin film. The spray, as it spreads, draws out the inner portion into radiate points, which open into a beautiful network, the centre cohering closely.

Croton oil throws out, in spreading, a fine spray in advance of the more closely cohering portion, which follows quickly. The outer edge breaks up unevenly into little indentations, the border of the inside portion being quite broken, but gradually becomes nearly entire. The surface too has openings, which increase quite rapidly in size, the outer ones being much the larger. In the final breaking up, before the holes open one into another, the outlines are beautifully fringed.

I experimented with the varieties of *olive oil*, alone, and with mixtures of the varieties, and with the addition of other oils; but I did not get the perfectly formed figures in so short a time as Dr. Moffat mentions.* My material, probably, had either been adulterated, or was not fresh, which last, I think, would make quite a difference. However, with each variety and mixture the figure was different. If the impurities were the same that Dr. Moffat used, it appears that differences in proportion are capable of detection. Indeed, in several instances, I decided that an approximate calculation of the amount of adulteration is quite satisfactorily shown by the figures formed.

Of many of the fixed-oil figures I obtained very nice patterns by Dr. Moffat's method—dropping thin glazed paper upon the perfectly formed figure, for an instant, then pressing between blotting paper to absorb the surplus oil; or, to bring out the pattern more clearly, floating the paper upon a colored liquid for a moment or two before pressing.

No written description can give any idea of the beauty of these figures, many of the formations being very delicately and peculiarly marked; while more beautiful than the form, and often equally characteristic is the exquisite play of colors upon the surface.

University of Michigan, July, 1874.

COMMERCIAL MERCURIAL OINTMENT.

By Jacob A. Muthersbough, Ph. G.

Extracted from an Inaugural Essay.

In consideration of the varying strength of the mercurial ointment as found in the market, I thought that it might be of some interest to

* Chem. News, XVIII, No. 473.

ascertain its variation in strength, which as will be seen by the following results, is considerable. Ten samples of the ointment were obtained from different establishments, and in each and every case, they were represented to be the officinal article. 100 grains of these ointments yielded respectively: 1, 48½ grs.; 2, 48½ grs.; 3, 48 grs.; 4, 46 grs.; 5, 30 grs.; 6, 30 grs.; 7, 26 grs.; 8, 25 grs.; 9, 24 grs.; and 10, 22 grains of mercury. The experiments were all conducted alike and under similar circumstances. The process employed to separate the mercury was as follows: 100 grains ointment were put into a large test-tube with one fluidounce of muriatic acid, and boiled until the grease separated and floated on the surface, the liquid portion was then separated from the black powder; to this powder another fluidounce of muriatic acid was added and the whole boiled until the mercury ran into a globule; the liquid portion was separated as before, the mercury washed with benzin to remove the last traces of fat, and finally washed with water, dried and weighed. The ointments that yielded from 45 to 48 per cent. of mercury, may be considered as being of full strength, as in separating it by the above process, there is a slight loss, say of about 2½ per cent. to 5 per cent. A sample of mercurial ointment known to contain one-third of mercury was examined by this process, and yielded the requisite amount of mercury. Three samples of blue mass were also tested in a similar manner, and in each case they were found to be of the officinal strength.

SYRUPUS ASSAFŒTIDÆ.

By J. W. Wood.

An eligible syrup of assafœtida, that would be not unpleasant to the patient, and also keep a reasonable length of time without change, has long been a desideratum among physicians and pharmacists. Many formulas have been published, but none seems to have met with general favor; and some produced so unstable a preparation as to render them altogether worthless. In experimenting towards these difficulties, the admirable solvent properties of glycerin, and its slight medicinal activity, commended it as a suitable medium, and the results prove that a very desirable and not unhandsome preparation may be obtained, that meets all the above requirements and is also

very conveniently prepared, without that method of continued rubbing so generally employed.

R.	Assafœtida, select,	grs. 256
	Glycerin,	f℥ii
	Alcohol, 95 per cent.,	f℥iii
	Oil of Gaultheria,	gttxv
	Oil of Cinnamon,	gttv
	Oil of Bitter Almonds,	gtti

Dissolve the assafœtida in the glycerin by the aid of a gentle heat, and strain if necessary. Dissolve the essential oils in the alcohol and add to the above, after which add simple syrup sufficient to make the whole measure one pint and incorporate thoroughly. Each fluidrachm will represent two grains of the gum resin.

This is a perfectly stable preparation.

A sample, which I made over two years ago, does not seem to have deteriorated in the least, and is, I think, as palatable as any syrup of assafœtida can be rendered of such strength.

Wilmington, Del., August, 1874.

THE ABUSES OF ELEGANT PHARMACY.

By Richard V. Mattison, Ph. G.

The attention of the writer has recently been a number of times called to new improvements in pharmaceutical science, some justly meriting the favorable consideration of pharmacists, while others cannot but be disapproved; among the latter class as one of the most recent improvements, tending to almost utterly destroy the therapeutic value of several well-known officinal preparations, let us notice the recent extensive use of the alkaline citrates as an adjuvant, thought peculiarly suitable to the elegant administration of the higher salts of iron.

Robiquet, in experimenting with ferric pyrophosphate, accidentally discovered that a solution of ammonium citrate would render the ferric salt soluble, thus giving birth to a new idea, the advent of which was, without further investigation, heralded forth to the world as an important chemical discovery, and was at once recognized as a desideratum long sought—a soluble phosphate of iron. Though a salt of pyrophosphoric acid, the therapeutic value of which is certainly questionable, such was its apparent elegance that the fact was overlooked

until quite recently, and not until this salt had unfortunately been made officinal in our Pharmacopœia, and designated as ferri pyrophosphas.

The scales constituting the officinal salt were supposed by Robiquet to be merely a mixture of ammonium citrate and ferric pyrophosphate. This probably is erroneous, for in the preparation of this salt the addition of solution of ammonium citrate to the ferric pyrophosphate decomposes the latter, and the elements being interchanged, pyrophosphate of ammonium and citrate of iron and ammonium are formed, thus:

$$2\,(Fe'''_2\,3\,SO_4) + 3\,Na_4P_2O_7 = Fe'''_4\,(P_2O_7)_3 + 6\,Na_2\,SO_4.$$

$$Fe'''_4(P_2O_7)_3 + 8\,(NH_4)_3\,C_6H_5O_7 = 4\,(Fe'''\,(NH_4)_3\,2\,C_6H_5O_7) + 3\,(NH_4)_4\,P_2O_7.$$

The tendency of late years is to concentrate medicines. We can see no advantage in administering iron and ammonium citrate in this form, diluted so largely with the ammonium pyrophosphate. Why not use the required quantity of ferric citrate at once, and discard the use of the officinal "ferric-pyrophosphate?"

For years the demand for elegant pharmaceutical preparations has been steadily increasing, giving rise to the "specialties" of various manufactures with which our markets are flooded. It is probably this demand, coupled with a taste for chemistry, that led Mr. J. A. Creuse into the experiments which resulted in the discovery of a class of scale salts analogous to the ferri pyrophosphas (U. S. P.) noticed above, and which, for a time, bid fair to rob us of the most valued of our chalybeates, and substitute a comparatively worthless series in their stead.

This discovery was at once seized upon by prominent manufacturers, and elixir of gentian with tincture of chloride of iron prepared with solution of potassium citrate, "tasteless, inodorous and palatable," was heralded forth, by advertisement and circular, with commercial travellers, along every main line and branch road in the country, and physicians were liberally sampled and egregiously humbugged.

The writer is a strong advocate of "elegant pharmacy," but is not a believer in sacrificing the medicinal virtue of any drug or chemical for its palatable effect; therefore notices with regret a recent article, by Dr. C. G. Polk, on "Sesquisalts of Iron" (*Druggists' Circular*, April, 1874), from which we quote. Speaking of scarlatina, etc.:

"To trifle with the ferric chloride by using potassic citrate in such cases would be almost criminal." He justly condemns the use of alkaline citrates, as used in the "tasteless tincture chloride iron." In the same article he advocates their use in the preparation of the so-called phosphate of iron and quinia elixir, and also for a preparation to which he gives the name of "potassio-citrate of the phosphate of iron." We fear this name will lead to a new system of chemical nomenclature, not at present explained in our test-books.

In the same article, both the U. S. P. preparations of ferric chloride and syrup of ferrous iodide, are sharply criticized, and for the latter, higher oxidation, with the use of the inevitable potassium citrate and the improved formula of Prof. Remington, recommended. The name of "tasteless syrup of iodide of iron" is unfortunate, as the preparation contains no iodide of iron. This can be proven by evaporating to dryness, and washing upon a filter with anhydrous alcohol. The filtrate, upon evaporation, leaves crystals of potassium iodide (this was first shown in *The Pharmacist*, 1873), and shows the decomposition analogous to that occurring in the U. S. P. ferric pyrophosphate.

After a thorough trial in the preparation of liquor ferri chloridi and syrupus ferri iodidi upon a somewhat extended scale, our opinion is that the officinal formulas will be found difficult to improve upon. In conclusion, with all who love Pharmacy, for its own sake, we join hands in entering our protest against one of the abuses of elegant pharmacy.

[Note by the Editor.—Robiquet did not regard his preparation as a *mixture* of citrate of ammonium and pyrophosphate of iron, but as a double salt, about the correct composition of which, however, he expressed no opinion. This view has never been fully disproven. Many crystallizable double salts are decomposed by alcohol and other solvents, in which only one of its component salts is soluble, or which contain the elements for forming such a soluble compound. But even if it were proven that the solutions of these iron salts with alkaline citrates did not contain any double salt, it does not follow that the decomposition takes place in as simple a manner as indicated by the equations contained in the above paper. By patient researches, extending over a period of eight or nine years (1854 to 1862), J. H. Gladstone has proven that mixed solutions of two salts, of different bases and acids, interchange them partly in such a manner that *four*

salts are found in the solution, provided that no insoluble compound is formed. The salts in question, if they be no true double salts, would therefore be mixtures of at least four salts, and in the case of the officinal pyrophosphate of iron, would contain a portion of that compound unaltered, but in a soluble condition. Whether the medicinal value of this salt is questionable, we leave to physicians to determine; but it appears to us to possess valuable properties, though perhaps not superior to those of the ordinary phosphate, if in a similar soluble condition.

We advocate what may be called elegant pharmacy, but we are opposed to what we consider a degradation of pharmacy and of medicine, which we find in the easy virtue of many physicians of listening to, and practically approving of, the claims of superiority for thousands of semi-secret medicines, and in the indolence of many pharmacists, which is abundantly manifested by purchasing numerous preparations, which could be made by them of as good, if not better, quality, and as cheap, if not cheaper, than those purchased. According to our view, elegant pharmacy should be practised in the pharmacist's shop, and not in the manufacturer's laboratory.

GLEANINGS FROM THE EUROPEAN JOURNALS.

By the Editor.

A False Angustura Bark has been described by the editor in the February number, page 50, of this journal. Profs. Oberlin and Schlagdenhauffen, of Nancy, state that, in a large number of pharmacies of the department of Meurthe et Moselle, and in French drug stores generally, a bark is met with, the physical and organoleptic characters of which correspond completely with those described in the place mentioned above. They have been, since the close of 1873, occupied in studying this bark, and report the same to be derived from *Esenbeckia febrifuga*, Martius, s. *Evodia febrifuga*, Saint Hilaire, tribe Pilocarpeæ, nat. ord. Diosmaceæ. The tree is very abundant in the province of Minas Geraes, Brazil, where it is known as *Tres folhas vermelhas* or *Laranjeiro do mato*. The bark is highly esteemed as a tonic, febrifuge and antidysenteric, and is called by the natives *China Piavi*, *China du Brésil* (Brazil bark). The authors have discovered in this bark an alkaloid, which they promise to describe hereafter.—*Jour. de Pharm. et de Chim.*, 1874, *August*, *p.* 105.

Preparations of Bromide of Iron.—Mr. Prince proposes a standard solution, containing one-third of its weight of the bromide, and which is prepared by pouring into a quart flask 100 grams iron filings, free from rust; 768 grams water, and 210 grams bromine, the latter to be added in five portions; loss of bromine evaporation is avoided by keeping the orifice closed with a cork. After combination has been effected, the contents of the flask, including the iron, are transferred to a suitable bottle, which is kept well stopped. Of the clear liquid, 30 grams are rapidly evaporated to dryness, and the residue should weigh exactly 10 grams.

Troches of Bromide of Iron are made by evaporating 18 grams of the standard solution to one-half, and incorporating it with an intimate mixture of 1·5 grm. powdered tragacanth and 100·5 grm. sugar; the mass to be divided into 120 troches.

For Pills of Bromide of Iron, 12 grm. of the standard solution and 0·1 grm. powdered iron are evaporated to expel all the water, and the residue while still hot is rapidly mixed, in a warm and dry mortar, with sufficient powdered liquorice root and gum arabic; the mass to be divided into 80 pills. Each lozenge and pill contains 0·05 grm., or $\frac{3}{4}$ gr. of ferrous bromide.

A Sprup of Bromide of Iron is proposed to be made by mixing 12 grm. of the standard solution with 620 grm., or half a litre of gum syrup flavored with orange-flower water.—*L' Union Pharmac.*, 1874, *July.*

Syrup of Hypophosphite of Iron is recommended by P. Carles to be made by dissolving 15 grm. of ferrous sulphate in 20 grams, and 9·14 grm. of crystallized hypophosphite of calcium in 330 grm. of hot distilled water; the mixed solutions are forcibly agitated, after fifteen minutes the magma is thrown upon a linen strainer, expressed, the liquid filtered through paper, and enough water added to make the weight of the filtrate 360 grams, in which 660 grams of sugar are to be dissolved by the aid of a moderate heat.

The syrup should be kept in bottles, well filled. Each tablespoonful, weighing 25 grams, contains 0·25 grams of the hypophosphite. If mixed with an equal quantity of orange-flower syrup, it has a very agreeable taste.—*Ibid.*

New Test for Iodates.—Egidio Pollacci states that phosphorus liberates iodine from aqueous solutions of iodates, and is itself oxidized to

phosphoric acid. The reaction is readily made in a test-tube containing the liquid, which, after the introduction of a fragment of phosphorus, gradually assumes a brown-yellow color, and, on being left to repose, deposits small scales of iodine upon the surface of the phosphorus. The presence of free iodine may then be demonstrated by starch or bisulphide of carbon, in the usual manner. Amorphous phosphorus acts upon the iodates even more energetically than ordinary phosphorus, the reduction of the iodine being so rapid that a lively agitation is produced in the liquid.

On the other hand, iodate of potassium may be employed as a very delicate test for free phosphorus.—*Jour. de Phar. et de Chim.*, 1874, *August, p.* 104—*Gaz. Chim. Ital.*, iii.

Elixir of Tar.—Magnes-Lahens proposes to triturate 5 grams of tar (of Pinus maritima) with 15 grams of sugar, and then with 100 grams of 67 per cent. alcohol, which is to be added gradually. When the sugar is dissolved the liquid is filtered, and contains then 3 grms. of the hydro-alcoholic extract of tar, or 0·15 grms. in the coffeespoonful. The latter quantity is sufficient for a glassful of water, and yields a good tar water, containing a very small proportion of alcohol. —*Ibid., p.* 126.

Suppositories of Chloral have been recommended by Dr. Const. Paul in cancer of the uterus. They are made from cacao butter 11 grams, white wax 7 grams, and chloral hydrate 6 grams, to be divided into six suppositories.—*Ibid.*, 128.

Nitrite of Amyl.—Prof. A. Hilger recommends the following as the best process for preparing this medicinal agent.* Nitrous acid, prepared from arsenious and nitric acids is passed into chemically pure amylic alcohol at a temperature of 70° to 90° C., until the odor of amylic alcohol is no longer perceived. The distillate is rapidly agitated with magnesium oxide or diluted potassa solution, then dehydrated by, and finally rectified over chloride of calcium, which must not be alkaline, only the portion distilling between 90° and 95° C. being collected. It is then free from acid reaction, has a pale yellow color, a peculiar characteristic odor, a boiling point of 94–95° C. and a specific gravity of 0·902 to ·9026. In contact with the air it soon

*The author was evidently not aware of the experiments of A. B. Tanner, whose process was published on page 21 of this Journal for January, 1872.—Ed. Am. Jour. Pharm.

acquires an acid reaction, nitrous and nitric acid being formed, after which valerianic acid and amylic valerianate appear; amylic alcohol is likewise found among the products of decomposition, but hydrocyanic acid could not be detected. Moisture does not prevent the decomposition, and the author suggests to preserve the amylic nitrite by the addition of a little fused pure chloride of calcium and calcined magnesia.

E. Rennard likewise rejects the use of nitric acid in preparing this nitrite, and recommends the employment of nitrous acid; he gives ·877 as the specific gravity of amylic nitrite, which, however, according to Hilger is not correct.—*Archiv d. Ph.*, 1874, *June*, 485–489.

Mercuric Oleate.—Prof. Hilger found that precipitated and rapidly dried mercuric oxid is easily dissolved in oleic acid at a temperature not exceeding 60° or 70° C.; a higher temperature causes decomposition of the acid and separation of mercury. With 15 or 16 per cent. of mercuric oxide the oleate constitutes a thick liquid; with more oxide it becomes solid. A solution of 30 per cent. mercuric oxide in oleic acid is possible under the above precautions; a larger quantity causes decomposition. Chemically pure oleate of mercury could not be obtained by double decomposition of either aqueous or alcoholic solutions. To obtain the oleate of a firmer consistence, the author recommends the addition of a little palmitic or stearic to the oleic acid.—*Ibid.*, 490–493.

Decoction of Salep is best prepared and the formation of lumps completely avoided, if the powdered salep is first moistened with a few drops of alcohol, before it is submitted to the action of water.—Depaifve in *Jour. de Phar. d'Anvers*, 1874, p. 264.

THE VANILLA.*

The vanilla is remarkable for its climing habit, which is not common among orchids. There are several species, most of which are natives of the hot and damp regions of South and Central America; the genus is also represented in tropical Asia and Africa. The stems climb to the height of twenty or thirty feet, twining round the trunks of trees, and throwing out a profusion of aërial roots, some of which eventually reach the ground, as is the case with the banyan,

* From the Gardener's Chronicle for May 23d, 1874.

while others float in the air. The leaves are thick and fleshy, as also are the greenish-white flowers. The important part of the plant, however, is the pod, which, in some of the species, is an article of commerce, and yields the delicious flavoring which is so well known. Some little uncertainty exists as to which of the species produces the most valuable fruit. It appears, however, that *V. planifolia* and *V. aromatica* are the most important, although *V. guianensis*, *V. palmarum* and *V. pompona* also yield some of the vanilla of commerce. The pods as imported are narrow and flattened, from five to ten inches long, and of a dark brown color; they are pulpy within, and contain a great number of very small dark seeds.

A great part of the vanilla of commerce is brought from Mexico and Venezuela, and principally from Vera Cruz, whence, according to Humboldt, the value of the annual export, in his time, was 40,000 dols. The cultivation is mainly carried on at Misantla, twenty-four leagues northwest of Vera Cruz, the inhabitants of which are the only people in Mexico who cultivate the plant. The growth is indeed extremely easy, as the ground requires no tilling; slips of the vanilla plant are set at the foot of a tree on the approach of the rainy season, and soon begin to spread up the trunk. The plantations are cleared once a year from weeds and undergrowth, and in the third year the plants bear fruit.

Five varieties are recognized by the growers. One, the vanille de cochon, is so called from emitting an offensive smell whilst drying. The harvest begins about December, when the fruit becomes yellowish-green. There are two ways of preparing it for the market. In one method the fruit is allowed to dry until the pod looses its green color. Straw mats covered with woolen blankets are spread on the ground and when these are warmed through the fruits are spread on them and exposed to the sun. After a time they are wrapped in blankets, and placed in boxes covered with cloths, after which they are again exposed. In about twelve hours the fruits should become of a coffee color, but if they do not, the process is repeated. After about two months daily exposure they are tied up in bundles of fifty and packed in tin boxes. Five qualities of vanilla pods are known; the best is the *primiera*, the pods of which are twenty-four centimetres long and proportionately thick. The second quality is called *chica prima*, the pods of which are shorter, and two count as one; the third, *sacate;* and the fourth, *vesacate*, are still smaller, four of the latter being

reckoned for one; they are gathered before they are ripe. The fifth and poorest quality is called *basura;* the fruit is very small, spotted, and much cut or broken about.

The following is another method of preparing vanilla for the market: About 12,000 of the pods are strung together by their lower end, as near as possible to the footstalk; "the whole are plunged for an instant into boiling water to blanch them; they are then hung up in the open air and exposed to the sun for a few hours. By some they are wrapped in woolen cloths to sweat. Next day they are lightly smeared with oil by means of a feather or the fingers, and are surrounded with oiled cotton, to prevent the valves from opening. As they become dry, on inverting their upper end they discharge a viscid liquor from it, and they are pressed several times with oiled fingers to promote its flow. The dried pods, like the berries of pepper, change color under the drying operation, grow brown, wrinkled, soft, and and shrink to one-fourth of their original size. In this state they are touched a second time with oil, but very sparingly, because with too much oil they would loose some of their delicious perfume."

It appears somewhat remarkable that the cultivation of vanilla in the West Indies has not been largely undertaken, as it would be attended with but little difficulty, and would be a source of much profit to the inhabitants. But even in Caraccas and Guiana, where the plant grows profusely in a wild state, it is entirely neglected. In the Isle of Bourbon, however, it has been cultivated with considerable success, and seventeen and a half tons were exported from Réunion in 1871. At Liège it is grown, on a small scale, to the value of 600 francs per annum; and a plant cultivated at Paris, in 1840, attained the height of three yards, and yielded 117 pods, which ripened in twelve months. In England it has been in cultivation since 1759; fine examples may be seen in the tropical and economic houses at Kew. Mr. Ewing and Mr. E. Bennett grew the vanilla with considerable success at Osberton; the latter gathered no less than 300 ripe pods off a single plant in one season. He considers a temperature of from 50° to 70° to be most suitable for it. He found it necessary to effect fertilization by artificial means, the stigma being prevented from receiving the pollen of its own flower by the interposition of an organ called the retinaculum.

As the English-grown pods are very highly flavored, it is possible that it might be practicable to grow it for economic purposes. The

annual import of vanilla amounts to about five or six cwts.; its price varies very greatly, being sometimes as high as 125*s*. per pound, and at other times as low as 26*s*.

The chief use of the vanilla is in flavoring perfumery and confectionery, and especially chocolate. One pod is sufficient to flavor a pound and a half of chocolate, being ground with sugar for that purpose. The fragrance is said to act upon the system as an aromatic stimulant, exhilarating the mind and increasing the energy of the animal system. It is occasionally employed on the Continent in cases of hysteria; and is used by the Spanish physicians in America as an antidote to poison and to the bite of venomous animals, as well as in other cases. A liquid used in Peru, where it is known as *Baume de vanille*, exudes from the open pods at perfect maturity. The fruits in time become covered with an efflorescence of fine needle-like crystals which possess properties similar to those of benzoic acid; when viewed through a microscope, with polarized light, they are very beautiful objects.

De Menonville, who traveled to Guaxaca in 1777, thus describes his discovery of vanilla in that district. After various hindrances and disappointments he says: "At length an Indian with a hoe in his hand, made his appearance. 'Brother,' said I, holding out a dollar, 'show me some vanilla and this is yours.' He coolly bade me follow him, and advancing a few steps through the underwood into a thicket, in which were a number of trees, he immediately climbed up one, threw down to me two pods of vanilla perfectly ripe, and pointed out to me a branch on which several others were hanging, yet green, together with two faded flowers. The form of the leaves, the fruit, the peculiar smell of the plant—ererything convinced me that it was the real vanilla, in everything corresponding with such as I had seen at Vera Cruz. All the trees of this little copse were covered with it. I saw a quantity of green fruit, but collected no more than six specimens of these, and four large pods which were ripe. I caused the Indian afterwards to part from the roots some of the scions which had sprung up. These I tied well together, wrapping up the whole in the leaves of an Arum, which at their base are three feet wide. After thus packing a faggot, which weighed upwards of 30 lb., I placed it in my large sack, which I fastened on my horse. I was so well satisfied with my Indian, that, besides what I promised him, I gave him two reals in addition. For his part, unwilling to be outdone

in generosity, he ran to his hut and brought me three other pods of vanilla."

The Chica vanilla of Panama is yielded by another Orchid, a species of Sobralia. The expressed juice of *V. claviculata*, a native of mountainous woods in the West Indies, is applied to recent wounds, and is hence called by the French in San Domingo *Lian à blessures*. There is a species known as *zizpic* in Yucatan, which is a great ornament of the *cenotes*, or subterranean water caverns of the country. These singular caverns are sometimes entirely subterranean, and are then, of course without vegetation; frequently, however, they are more or less open at the top, when they are often of surpassing beauty on account of the luxuriant development of vegetable life which they contain. To these *cenotes* the few ferns of Yucatan are almost confined, and it is here that this vanilla attains perfection. The pods are occasionally taken to market at Valladolid, where they may be bought at an almost nominal price.—*Pharm. Journ. and Trans., July* 11, 1874.

INDENTITY OF SCAMMONIN PREPARED FROM THE ROOT OF CONVOLVULUS SCAMMONIA, WITH THAT OBTAINED FROM ALEPPO SCAMMONY.*

By Professor H. Spirgatis.

Some time since† the author published an account of an investigation of the chemical constitution of scammonin, the resin of *Convolvulus Scammonia*, Linn. The scammonin used by him on that occasion was obtained from so-called Aleppo scammony,—*i. e.*, the milky juice of the above-named plant hardened in the air,—the latter substance being at that time the only material containing scammonin that could be supplied. But as at the present time the root itself of *C. Scammonia* comes into commerce from Asia Minor, and as the German Pharmacopœia requires that the officinal Resina Scammoniæ should be prepared from it, the author considered it desirable also to prepare scammonin direct from the root, and to compare it with that formerly prepared by him from scammony. This inquiry seemed to him to be the more desirable since it has been affirmed that the two bodies are not identical.

The scammonin was prepared from the roots in the ordinary way, by exhausting them with water, removing the resin with spirit, de-

* *Neues Repertorium für Pharmacie*, xxiii., 260.
† *Annalen der Chem. und Pharm.*, cxvi., 289.

colorizing the alcoholic solution with animal charcoal, distilling off the spirit, and repeated washing of the separated resin with hot water. Professor Spirgatis was not able to observe any difference between the scammonin so prepared and that previously obtained from Aleppo scammony, some of which he had still in his possession. Both bodies are amorphous, colorless, transparent, without smell or taste, presenting the same phenomena in combustion, and presenting also precisely the same behavior to solvent and chemical reagents, such as alcohol, ether, chloroform, petroleum, oil of turpentine, acetic acid, concentrated sulphuric acid, caustic potash and soda and their carbonates, ammonia, and in alcoholic solution with acetate of copper, acetate of lead, nitrate of silver and chloride of iron.

Finally the scammonin prepared from the root, dried at 100° C., gave in three experiments the composition—

	1.	2.	3.
C . . .	56·62	56·59	56·62
H . . .	7·75	7 70	7·88
O . . .	—	—	—

Whilst a fresh combustion of some of the old resin under similar conditions gave, as on the former occasion, the figures—

C	56·60
H	7·76
O	—

The author considers it, therefore, unquestionable that the scammonin prepared direct from the root is identical with that formerly prepared by him from Aleppo scammony.—*Pharm. Jour. and Trans., July* 25, 1874.

SCAMMONY AND ITS ADULTERATION.

By A. F. Haselden, F.L.S.

Authors have stated that chalk, starch, gum, common resin, guaiacum, jalap resin, decoction of jalap, and of the leaves and twigs or villous stems of the scammony plant, senna, manna, gamboge and ivory black, are used for the purpose of adulterating scammony.

The following form for making spurious scammony has been published as being followed by some dealers:

Gum Scammony, . . .	6 pounds.
Gum Arabic, ...	6 pounds.
Calomel, ...	2 ounces.
Aleppo Scammony, ...	1 pound.
Ivory Black and Water, . . .	q. s.

This was printed and published forty years ago, yet not so far back but that some may remember having seen it. Whatever may have been the case then, I do not believe for one moment that any such system is now followed—unless it be in an article I have before me, and obtained recently, yclept *skillet*, valued at 13*s* per lb., and so named, I infer, from the pot in which it was melted and mixed together. Of the use to which this is put I am quite ignorant.

I have never yet found common resin, guaiacum or jalap resin in scammony; at the present time obviously, jalap resin would not be used, as it is dearer than scammony resin. Common resin and guaiacum are readily found if present. That there are several qualities of scammony or scammonium of the B. P. in the market, and I presume in use, there can be no question. I have before me five wholesale price lists, wherein I see Aleppo scammony quoted from 18*s*. to 38*s*. per lb., and virgin scammony from 34*s*. to 40*s*. and 44*s*. per lb. This variation may be readily understood, as one buyer may purchase under more favorable circumstances, or such an article may vary in quality without fault of any one, and thus fetch a less price. In one instance out of the five lists, scammonium B. P. is quoted at 60*s*. per lb.; this must be something exceptional. Resin of scammony does not vary much in price, being quoted from 13*s*. to 16*s*. per lb. I have some which cost me 30*s*., but the manufacturers of this article will, I believe, discontinue making it, as it possesses intrinsically no advantage over the cheaper; the difference in the cost, I am led to think, arises from the employment of pure spirit in one case, and methylated in the other, and though the spirit would be recovered, there must be some lost. These resins may be readily examined by burning, and I found the quantity of residue precisely similar in both, amounting to less than five per cent. of ash.

I would now venture to suggest where, perhaps, the framers of the Pharmacopœia compounds in which scammony is employed seem to have acted inconsistently. In the London Pharmacopœias, before the publication of the B. P., virgin scammony was invariably ordered. In 1864, a permission or discretion was placed in the hands of the compounder, in making extract. colocynth. co., to use either scammony *or* resin of scammony; in 1867, B. P., *resin* of scammony alone is ordered, leaving no option, whilst in pilul. colocynth. comp., of both books, scammony, meaning virgin scammony, is required. It may be worth while to inquire why this apparent confliction; that

which seems good for the extract might be thought good for the pill, the confection and the compound powder. I will now refer to the opinions expressed years ago, when the resin of scammony was introduced by Messrs. McAndrew. In Vol. xviii, page 452, 1st series *Pharm. Journ.* Dr. Fred. J. Farre is stated to have reported at the evening meeting of the Society, Feb. 3d, 1859, as follows:—"The principal cases, therefore, are Nos. 1 and 3; in these I think the resin and virgin scammony acted about equally well. In the first case both purged effectually and quickly, the virgin scammony rather the most; each griped upon one occasion, and not upon the other. In the third case the resin purged the most, but it also griped the most. As far, therefore, as I can judge from these few trials (five cases), I am of opinion that the medicinal value of the two preparations is about equal." Dr. Johnson reported also well of the resin. Upon the same occasion Dr. A. B. Garrod spoke favorably of it, as thus:

"From these numerous observations, 120 in number, together with many others which have not been tabulated, I am quite convinced that the scammony by the new process from the untapped root is quite equal as a remedy to the very best virgin scammony met with in commerce, and equal, in fact, to the resin which is extracted from commercial scammony by means of ether, and it possesses this most important advantage over the scammony of commerce, namely, of being entirely free from the frauds which are constantly practised upon it in the country where the plant grows, and in which it has hitherto been collected, and therefore being perfectly uniform in its physical characters, composition and therapeutic action. There can, therefore, be no objection, but manifest advantage, in employing it in place of the scammony commonly met with."

In the same volume, p. 548, I find myself writing favorably of the new resin, and after fifteen years I see no reason to alter that opinion. After these quotations I feel that I may safely suggest that, in the next edition of the B. P., resin of scammony may be introduced in the place of scammonium, and in prescribing the mode of obtaining scammonium, if retained, instead of saying "a gum-resin obtained by *incision* from the living root," it would give more correct information if stated by cutting the living root *through* at the top, about two inches from the neck, below where the stalks spring from.

I come now to the consideration of the employment of the resin

from another point of view. A genuine article may be readily obtained at a moderate price, and it may be easily examined; but, so long as the authorities require virgin scammony to be used, I would recommend that the best that can possibly be obtained be bought, and this practice alone would soon stop the admixtures abroad, which I cannot but think arise from want of care on the part of the collectors, the mode in which it is collected, and the temptation there is to make weight.

Let me impress upon those who may have any doubt upon the subject that the substitution of the cheap scammony for the scammonium of the B. P. in the preparations contained in that book, or where scammony is ordered by prescribers, is virtually an adulteration. The B. P. states that from eighty to ninety per cent. of resin may be extracted by ether, but it would be unreasonable to expect that every pound in a chest taken out separately would yield that percentage, and therefore some margin should be allowed in the examination of such a substance before it is condemned as being adulterated.—*Pharm. Journ. and Trans., July* 18, 1874.

CONTRIBUTIONS TO VEGETABLE CHEMISTRY.

By F. A. Hartsen.

Thamus Red.—In order to obtain the coloring matter from the fruit of *Thamus communis*, it is pressed, and the juice boiled; the coloring matter is thus precipitated along with the coagulated albumen. The color is extracted from the dried precipitate by benzene, and a further quantity may be obtained from the dried pods by the same solvent. On allowing the bright orange-colored solution to evaporate, it deposits thamus red in thin prisms or plates, which may be freed from adhering fatty matter by boiling with a solution of potassium hydrate, and recrystallizing from benzene. It is insoluble in water, readily soluble in alcohol and ether, and very soluble in benzene. It dyes linen and silk, and resists the action of strong alkalies. It is not attacked by boiling nitric acid, but dissolves in concentrated sulphuric acid, with an indigo-blue color.

Influence of the Time of Year on Plant Chemistry.—In autumn the author was unable to obtain chrysophyll either from *Ulmus* or from *Mercurialis perennis*, although both readily yielded it in the spring. In autumn, too, the chlorophyll obtained from plants, even before the

color of the leaves has undergone any perceptible change, is very easily alterable. *Isopyrum thalyctroïdes*, at its blossoming time, gives two alkaloids, one crystalline, the other amorphous; but in autumn, when the green part of the plant is withered, the former disappears, whilst the latter occurs in larger quantity. This is an important fact for the technical preparation of alkaloids, especially with such substances as opium, which contain several alkaloids.

Examination of Agaricus fasciculatus and Lactarius deliciosus.—The fungus is pressed and treated with alcohol, in order to remove water, then macerated with a mixture of alcohol, and the ether removed from the extract by distillation. On cooling, the alcoholic solution which remains deposits crystals, which are freed from fat by boiling alcohol. By means of ether the crystals may be separated into *mycosterin* and *mycoraphin*, the latter of which is more soluble. The exhausted fungus still yields some mycosterin by treatment with benzene. Both substances are soluble in water, difficultly soluble in cold alcohol. Mycosterin crystallizes in small nodules or spherules, consisting of concentrically grouped needles. Mycoraphin crystallizes in two forms, from alcohol in plates, and from ether in thin needles, which are colored red when heated with concentrated sulphuric acid. It is possible that Gobley's agaracin is a mixture of these two substances.

Preparation of Pure Chlorophyll.—Finely chopped ivy leaves (*Hedera helix*) are made into a paste with spirit of 55°, and pressed after twelve hours. This removes the water, a bitter substance (*helicin*), and a saponifiable compound. The pressed leaves are now soaked in benzene for twenty-four hours, and the benzene is removed from the expressed solution by distillation. The dark brown fatty residue, amounting to $2\frac{1}{2}$ per cent. of the leaves, is treated with a solution of sodium hydrate, filtered, and precipitated by common salt. The precipitate, after being washed with a salt solution, is dissolved in water, and precipitated with a solution of copper sulphate. This precipitate, after being washed and dried, is boiled with absolute alcohol, and then washed with ether and benzene; this treatment removes the copper soap, and leaves the compound of chlorophyll with copper oxide. Finally, the latter is suspended in alcohol, and decomposed by sulphuretted hydrogen. On evaporating the solution, the chlorophyll is left of a very dark green color, almost black, and quite free from fatty matter. It is soluble in hydrochloric acid and

in alcohol, yielding a solution of a very fine green color.—*Journ. Chem. Soc.*, 1874, *July*, from *Chem. Centr.*

COMPARATIVE METHOD OF DETERMINING TANNING MATERIALS.

By E. Schmidt.

The question to be solved is—Knowing that a certain weight, P, of pure tannin is required to obtain a certain result, how much of another tanning body, *e.g.*, the extract of a wood, is required to produce the same result? None of the published methods for the determination of tannin is sufficiently precise, easy, and rapid for industrial purposes. The author proposes a modification of Pribram's method with sugar of lead.

A. *Preparation of the Test-Liquor.*—50 grms. neutral acetate of lead are dissolved in 400 grms. of alcohol at 92 per cent. and distilled water is added so as to make up 1 litre.

On the other hand, 1 grm. of tannin is dissolved in 40 grms. of alcohol at the same strength, and the solution is made up with water to the bulk of 100 c.c.

This being done, 10 c.c. of the tannin solution are taken, 20 c.c. of water are added, and heated to 60°. The lead liquor is then run into the hot solution with a burette graduated to tenths of a c.c., so long as a precipitate is formed. At this temperature, and with these alcoholised liquids, the precipitate forms and settles rapidly. Iodide of Potassium may be used as an indicator to show excess of lead, proceeding in the same manner as is done with ferrocyanide in titrating phosphates with nitrate of uranium. If we suppose that to precipitate 10 c.c. of the tannin solution 28 degrees of the lead liquor have been required, then 2·8 c.c. of the latter = 0·10 grm. of tannin.

B. *Preparation of the Sample to be Tested.*—Suppose that chestnut-bark is to be examined. It is coarsely powdered, and 10 grms. are mixed with an equal volume of washed sand, and exhausted with water at 50° or 60° C. The filtered liquid is evaporated to dryness in the water-bath in a tared porcelain capsule. After evaporation the capsule is weighed, which shows the yield of the bark in aqueous extract. This extract is taken up in 40 grms. of alcohol at 92°, and water is added to make up 100 c.c. This liquid is filtered if needful. In this manner the resinous, albumenoid, pectic, and gummy matters are got rid off.

C. *Titration.*—The liquid thus prepared is divided into two parts, the first, one-third of the entire volume, serves for direct determination of the acetate of lead. Suppose that a gram of the dry extract of chestnut has required—for 10 c.c. of the tannin liquor—in three successive experiments, 16, 17, and 16 degrees of the burette, which corresponds to 57 per cent. of tannin. But this figure 57 represents, not only tannin, but every other substance capable of precipitating acetate of lead.

The tannin is then absorbed with bone-black, previously washed with hydrochloric acid, and dried at 100° C. in the following manner:—We act with bone-black upon the tanning liquor, and on a solution of pure tannin prepared at a standard somewhat lower than that indicated for the extract by the first direct titration. In the present case this solution of tannin should be prepared at 55 per cent.

From one and the same glass tube, about 1 centimetre in diameter, we cut off two lengths of 20 centimetres each, and we draw out each at one of its ends. The two tubes are fixed perpendicularly, with the point downwards, and plugged with a little carded cotton. Into each is put 10 grms. of the bone-black, pouring into one of them the second part of the tanning liquor under examination, and into the other the same volume of the pure solution of pure tannin at 55 per cent.

We then take of the tanning liquor (which has retained its original brown color in spite of the bone-black) 20 c.c., and after having heated it to 60° C., we drop in the standard lead liquor from the burette as before. Two successive trials show 16 degrees, =8 degrees for 10 c.c., in place of the 16 degrees found for 10 c.c. on direct titration. On the other hand, 20 c.c. of the solution of pure tannin require 14 degrees, or 7 for 10 c.c. Thus we see that in the tanning liquor (chestnut extract) there is a certain quantity of matter which acts upon the standard lead solution like tannin, corresponding to 1 degree of the lead liquor, *i. e.* to 357-thousandths of a centigram of tannin, 28 degrees therefore correspond to 10 centigrammes. The figure 57 obtained by direct titration is, therefore, too high by 3·57 per cent. and the extract contains 57–3·57=53·43 per cent. of tannin.—*Chem. News* (*London*) *July*, 1874, from *Bull. de la Soc. Chim. de Paris.*

NOTE ON PROCTER'S REACTION OF GALLIC ACID.

By Professor Flückiger.

In this journal,* it is stated that a mixture of faintly alkaline arseniate and gallic acid in aqueous solution by absorption of oxygen developes a green color.

There can be no doubt as to the correctness of the fact. I wish only to point out that the arseniate, that is to say, arsenic acid, has nothing whatever to do with this reaction. The phosphates, borates, silicates, carbonates, etc., may quite as well be used instead of the arseniate. The cause of the green reaction is the presence of a trifling amount of alkali, a fact which has long been well-known and expressly recorded, for instance, in Gmelin's "Organic Chemistry," among other reactions of gallic acid. The reaction is developed by any alkali, caustic or not, provided it be present in but extremely small quantity. Thus bicarbonate of sodium is a very convenient means of showing the reaction under notice; it displays, it need scarcely be mentioned, but a very moderate alkaline reaction.

The green reaction, it will be observed, has its merit, as it is not produced either by gallotannic acid or by pyrogallol.

There is another reaction which likewise is sufficient to distinguish gallic acid. If to an aqueous solution of gallic acid some drops of a dilute solution of ferrous sulphate (about one part of vitrol in 100 of water) are added, the mixture remains for some time colorless, provided the gallic acid be free from tannic acid, and the ferrous salt from ferric; the solutions, moreover, ought to be made in the very moment they are to be used. Ferrous gallate is of an intense violet hue; but it is not produced in the above mixture, because the solution of the sulphate has an acid reaction. This is due to sulphuric acid, which can be superceded by acetic acid if we add a little acetate of sodium. Then a trace of acetic acid is set free, and this now is not able to prevent the development of the violet color of ferrous gallate; an intense violet instantly makes its appearance.—*Pharm. Journal and Trans.* (*London*) *August*, 1874.

A NEW REMEDY FOR HAY FEVER AND SNEEZING.

By Horace Dobell, M. D.

Senior Physician to the Royal Hospital for Diseases of the Chest.

At this season of the year, when "sneezers" and sufferers from "hay fever" are in the depths of their miseries, it is merciful to make

* Amer. Journal of Pharmacy, August, 1874, p. 373.

public any reasonable suggestion for their relief. I have, therefore, much pleasure in being able to bring forward a little contrivance and a prescription, by the combined use of which immense comfort may be given to many sufferers.

The prescription is as follows:

Chloral Hydrate and Camphor (of each),	16 grains,
Carbolic Acid, ...	20 grains.
Pure Morphia, ...	13 grains.
Oleic Acid (enough to dissolve the morphia),	20 grains.
Castor Oil (the clearest and finest), .	7 drachms.

Rub well together to make a lotion.*

The "contrivance" is for the efficient application of the above remedy and consists of a minature bottle contained in a little box-wood case, so that it can be carried easily in the pocket. To the lid of the box is attached the cork of the bottle, and to the cork, in the same fashion as the spoon of a cayenne-pepper cruet, is fixed a little club-shaped rod of polished ivory, long enough to reach to the bottom of the bottle, and also to the upper extremity of the nostril. The little bottle is kept half full of the lotion above prescribed, and the little rod immersed in it. Directly the patient feels the tickle or other signal of a coming sneeze, he uncorks his bottle, withdraws the ivory club, wet with the oleaginous lotion, and gently pushes it up the nostril till it reaches the seat of the sneeze-signal; there it should be gently pressed, so as to apply the lotion to the part. After this the club is withdrawn and returned to its little bottle of fluid, where it becomes at once charged for a fresh application. As often as the sneeze threatens the operation should be repeated. Very often one application will keep off a threatened *fit* of sneezing altogether, even though its first effect may be to excite a sneeze.

I have requested Messrs. Savory and Moore to keep this little appliance ready-made and charged with the lotion, so that it can be sent by post without difficulty or delay. It has been of so much comfort in cases within my own practice, that I am sure it is worth while for one who has not yet found a remedy to give it a trial.

In cases accompanied by much throat irritation, it is advisable to combine with this treatment the use of the "Lozenges for Postnasal

* As different perfumes affect different patients peculiarly, no scent is added in this formula; but any one who prefers it may have it scented by the addition of whatever perfume is known to suit best.

Catarrh," prepared from a prescription formerly published by me ("On Winter Cough," etc., 2nd edition, p. 204), and always kept ready-made by Bell, Savory, Squire, Corbyn, Hanbury, and other leading chemists.

I may add that, when there is great prostration, and a tonic is required, Tincture of Eucalyptus Globulus will sometimes answer better than quinia, especially if there is much feverishness.

None of these remedies should be used without consulting the doctor in attendance on the case.

THE OILS OF CHINESE PHARMACY AND COMMERCE.

By Dr. F. Porter Smith,

Honorary Member of the Pharmaceutical Society of Great Britain.

The word for oil in Chinese is written as a compound of the characters for liquidity and let. Oil thus means with them the "letting liquid," that which removes the hindrance of friction. The enormous demand for oil as an article of daily diet to counteract the binding qualities of rice and other cereal foods, and in pastry-making, and the extensive use of varnishes, putties, paints, and pigments in China, lead to the manufacture of oil from all sorts of sources. Oil is exclusively used for lighting purposes in all stationary situations. It also enters into the composition of quack and orthodox plasters, a very favorite application in Chinese medicine and surgery. By the use of night-soil, on an extensive scale, in the form of irrigation, the rapid growth of enormous breadths of Cruciferous plants (a populous order in China) enables the Chinese to obtain large quantities of oil from this source. These colza-oils are miscalled olive-oil in some European manuals on China. The olive-tree is not known in China. Certain extracts are sometimes called oils in Chinese nomenclature. Soy is called an oil.

Oil of Almonds (Sweet).—A bland oil is said by Sir J. Davis to be obtained from the (mixed?) kernels of the apricot or almond-trees in North China, but I have never met with it.

Oil of (Star) Anise.—This oil is said by Dr. S. Wells Williams to be prepared from the fruits in small retorts, a hundred weight yielding about seven pounds of the oil. It is pale, warm, and sweetish, and becomes solid at about 50°. It is used as a condiment and cordial in

South China, and is exported thence to Europe and the United States. The common anise-oil has not been met with by me in China.

Oil of Apricot Seeds.—See Oil of Almonds.

Oil of Beans.—This oil is expressed in large quantities in North China, and at Newchwang, from the Dolichos Soja bean, by both natives and foreigners. The oil is often miscalled pea-oil, is dark, not very palatable, and has some tendency to cause sickness. It is used in cooking very largely, and is very cheap.

Oil of Benzoin.—A fragrant, oily preparation is sold under this name, but it is not liquid benzoin. Dr. Williams says it comes from India. It is used in making ointments and plasters. It is probably liquid storax, or the rose-maloes of commerce.

Oil of Cabbage.—This oil, a kind of colza-oil, is expressed from the seeds of *Brassica Sinensis*, in increasing quantities, all through the valleys of the Yang-tsze and Han rivers. Very primitive machinery is used for this purpose. The seeds are crushed, steamed, and put into wooden cylinders, usually made by hollowing out the trunks of trees. The oil is squeezed out of the mass placed in coarse bags, by means of wedges driven down by mallets, or by an arrangement similar to that by means of which piles are generally driven into the earth in this country. In the last case water power is sometimes employed. The proportional yield is very considerable. The oil is of a dark yellow color, thick, and has a pleasant odor. It is used for lamps, in cooking, and as a hair-oil. It is laxative, or even purgative to some extent, and applied to swellings, sores, and ulcers.

Oil of Camellia.—This oil is prepared from the seeds of the capsular fruit of the *Camellia oleifera*, or mountain tea-tree, as the Chinese call this shrub, which grows in the same situation and soil as the tea-shrub proper, known by the same generic name, *Ch'a* or *Ts'a*. This tea-oil, as it is miscalled by foreigners in China, is thinnish, yellow, and less fragrant than cabbage-oil. Large quantities of this oil come from the hilly districts of Kiang-si and Hunan provinces, where the shrub grows in profusion.

Oil of Camphor.—Oily or uncrystallizable camphor is obtained in the island of Formosa, in the form of a yellow, strong-smelling liquid, which exudes from the crude native camphor, stored in tubs or vats, to the extent of some 3 or 4 per cent. It is scarcely salable, and is

altogether inferior to the oil obtained from the *Dryobalanops camphora*, on the west coast of Sumatra, where the oil dripping from the split timber of the tree, felled to procure the Borneo or Baros camphor, is sold at the price of a Dutch guilder for a large quart bottleful. It would be worth importing to England for use as a cheap substitute for the Lin. Camphoræ. It answers capitally as an embrocation in rheumatism and sprains.

Oil of Chaulmugra.—This oil is made from the seeds of the *Gynocardia odorata*, or lucrubau fruits. The oil is both cold-drawn and made by superheating the crushed seeds. It is used in leprosy as an outward application, with doubtful benefit, and is *useful* in the treatment of pediculi and itch.

Oil of Cinnamon or Cassia.—This volatile oil, obtained from the leaves and twigs of the cassia-tree by distillation, is made in Canton, and regularly exported. It is the *Oleum Malabathri* of commerce. This oil is nearly as good as the Ceylon oil.

Oil of Cloves.—A well-made, heavy, acrid oil, of a pale reddish-brown color, becoming very dark by age and exposure to light. None of these essential oils were known to the old medical writers in China, and are, therefore, not met with, as a rule, in their Pharmacopœia or Herbal. They are nearly all made at Canton, and are obvious imitations of European articles of commerce.

Oil of Cotton Seeds.—The oil expressed from the seeds of *Gossypium herbaceum*, and *G. religiosum*, is commonly used for purposes of illumination in Chinese country villages, where all wants are met on the spot in the most primitive fashion. It is also used in cooking, but the taste is unpleasant. It is prescribed as a demulcent remedy, and is applied to leprous, scabious, and other forms of skin disease, so fearfully prevalent in China.

Oil of Fish.—The Chinese do not, as far as I can learn, extract oil from the liver of any fish, but there is an oil called *Yu san*, prepared from the entrails, etc., of a fish. The cod has not been met with in Chinese waters. Large quantities of a fish resembling the cod are caught off the coast of the Chehkiang (or Ningpo) province, in the sixth or seventh (Chinese) months. The oil obtained from the porpoise (or "river-pig," as they call it), which frequents the Yang-tzse-Kiang river as far up as Hankow, is used to make putty for caulking

vessels, and to burn in ship lamps. A yellow oil obtained from a fish, called *Hwang-ku-yu*, has a strong fishy smell, and is used to destroy lice. It is much used in veterinary medical practice, a department of the Chinese medical art which has been practised from an early period, and has an ancient and respectable literature of its own.

Oil of Ground Nuts.—This pale yellow oil, having an agreeable flavor, is expressed in large quantities from the seeds of the *Arachis hypogœa*, or underground nut. Hunan province supplies a good deal. It is very cheap, and makes a fair substitute for olive oil. The Chinese samples are much darker than the Indian, which are said by Dr. Waring to have a specific gravity of ·916.

Oil of Hemp Seeds.—Several hemp oils, derived from the seeds of a variety of the *Cannabis sativa*, are to be met with in Chinese commerce. Specimens examined were evidently oils obtained from sesamum seeds, or those of the flax plant, both of which are confounded with the hemp plant proper.

Oil of Lilies.—This is cabbage oil, in which the axillary buds of the lily plant have been digested. The oil is recommended to be applied to vesicular eruptions. This very same, or a similar, preparation was once in great repute in Europe. In fact, to read the Chinese Pharmacopœia of to-day is like reading the old dispensatories of the 17th and 18th centuries.

Oil of Linseed.—The oil of the seeds of a linum is used as a lenitive, pectoral, anthelmintic, and alexipharmic remedy, and as an application to scabbed heads. This oil is not easily procurable.

Oil of Myrrh.—A reddish oil, having the smell of myrrh, is said by Loureiro to be used in Cochin China to dress ulcers. The Chinese are fond of making empyreumatic oils of various substances.

Oil of Pine.—A sort of empyreumatic oil, or coarse turpentine, procured by heating the wood or knots of several species of *Pinus*.

Oil of Peppermint.—A very good essential oil is distilled at Canton from the leaves of *Mentha piperita*, *M. crispa*, *M. hirsuta*, and *M. Canadensis*. It is put up in small bottles holding about a drachm. It sells at about 30*s.* a pound. The Chinese bottles are very poor, and stand a good deal in the way of elegant pharmaay. There are several glass manufactories in the (northeastern) province of Shantung and at Canton. The bottles are very small and brittle. The

Chinese pharmacists decorate their shops with ginger-jars and small blue-ware bottles. An oil is prepared at Canton from the penny-royal plant. Mint is largely used as a remedy in belly-ache, but the dried leaves are generally used as an infusion.

Oil of Persimmons.—A glutinous oily extract is prepared from the fruit of the persimmon, a large, soft, orange-yellow fruit, very sweet, and often somewhat acrid. The fruit chosen for making this oil is that of the *Diospyros Embryopteris* or *Embryopteris glutinifera*, which grows plentifully in Hupeh province. The fruits are crushed to obtain the dark, resinous, thick juice, which makes a very capital varnish for the paper kittysols, or umbrellas of China. It is very cheap. An extract might be prepared from the fruit, as directed in the Indian Pharmacopœia, where it is prescribed as an astringent.

Oil of Poppy Seeds.—The opium poppy is largely grown in Sechuen, Yunnan and every province of China. It was introduced from Persia, a great source of drugs sent as tribute to China. Several splendid varieties of the flower are given in old lists of plants. Oil is obtained from the seeds, but I have never inspected a sample.

Oil of Ricinus Communis.—The castor oil plant grows to the height of more than ten feet, and forms a woody stem in Hupeh, but never survives the winter there. There is a red-stemmed variety and a white-stemmed plant, both of which are used to make the oil, which is used in cooking, and is sold for use as a lubricant on board foreign steamers. It is used medicinally, but not very frequently, as it does not purge Chinamen much, if at all. Croton oil is used by Chinese physicians in apoplexy, a common disease in China.

Oil of Roses.—This essential oil is used mainly as a scent for hair oil, so plentifully used by all Chinese women.

Oil of Sandal Wood.—The Chinese employ this thick, yellow, fragrant oil to daub over common fans, which are then sold as genuine sandal-wood fans.

Oil of Sesamum.—The black and white sesamum seeds are used to make an agreeable oil, much used by the higher classes in cooking food and making pastry. It is credited in the Chinese Pharmacopœia with ecbolic, emmenagogue, and anthelmintic properties. It answers all the properties of olive oil in the dispensary. It is the Til or Jinjili oil of India.

Oil of Sunflower.—This oil is known to the Chinese, but is not extensively used or known to be employed in pharmacy.

Oil of Spike.—A fine drying oil, is used in painting on porcelain and for varnishing. It is obtained from the Lavandula or an Ocymum. The Labiates do not abound in China, but they are held in great repute medicinally.

Oil of Tallow Seeds.—This oil, made from the albumen of the seeds of the tallow tree, or *Excœcaria sebifera*, is clear, but of a dark color. It is obtained, in the proportion of from 15 to 16 lbs. from one hundred weight of the berries, by grinding, steaming, and pressing the refuse which results from the preparation of the vegetable tallow. The oil is used to varnish umbrellas, to dress the hair, and to mix with the tallow to make the candles which form so effective a part of the religious ceremonies of Buddhism, the Ritualism of China. It has emetic and purgative properties. It is one of the few remedies given by the Chinese in cases of poisoning. Efforts are seldom made to rescue those suffering from opium-poisoning, a common mode of suicide in China.

It will be observed that the oils of Chinese commerce are almost exclusively taken from vegetable sources. This is one of the effects of Buddhism on their national life and economy. As Buddhism teaches that mercy and pity are noble sentiments, it forbids the destruction of animal life. The flesh of the cow and the sheep is never eaten by orthodox Chinese members of the Buddhist Church. Their wax is, therefore, vegetable, their tallow is vegetable, and their oils are vegetable. Their gelatines are made from sea-weed. Their daily diet is fish, oil and rice, with an occasional treat of pork.

There are many other vegetable substances, such as gourd seeds, the fruit of the *Aleurites triloba*, etc., from which the Chinese might prepare, or formerly have prepared, vegetable fats, in obedience to their strong religious teachings and highly economic tendencies. Mineral or rock oils are met with in Shansi, Sechuen, and Formosa, and in Corea. They are not used for illuminating purposes, as they are very inflammable, and are said to have been employed in warfare in the composition of a sort of Greek fire.—*Pharm. Journ.* [*Lond.*], *July* 25, 1874.

Varieties.

Dyspepsia and the Use of Pepsin.—The views of Dr. Schacht concerning digestion have been confirmed by Professor Leube (the inventor of Leube's meat solution) of Jena, in a lecture just published on stomach diseases. He says: 1. No condition of the stomach has yet been observed in which pepsin is altogether absent. 2. The cause of indigestion is generally the absence of sufficient acid. 3. The action of pepsin in a solution of albumen resembles that of a ferment, and it will continue so to act without end, merely by the addition of more acid. 4. Alcoholic solutions, especially wine, on account of the tannin it contains, should be avoided as vehicles for pepsin. Finally, he recommends, in case of indigestion, a solution of chopped meat with water, adding a small proportion of pure muriatic acid, and some thickening. He finds such a solution very nourishing, and reports excellent results. These views and experiments are not novel, but exhibit the old doctrine as to digestion, and it appears to be the sound one. The secretion of the pancreas is now thought necessary to the digestion of fatty substances; and where these are used to any extent—as in cod-liver oil—it would be best to take the new medicine pancreatin, which acts best with an alkali instead of an acid, or to use a little of the solution of the pancreas of freshly killed animals.—*Scientific American, August* 8, 1874.

Purification of Oxalic Acid.—When it is required to prepare large quantities of pure oxalic acid, Stolba recommends crystallization from hydrochloric acid. The oxalic acid to be purified is dissolved in a sufficient quantity of ten or fifteen per cent. boiling hydrochloric acid, the filtrate allowed to cool, the mother liquor drawn off, and the crystals washed with small quantities of water until the washings contain but very little hydrochloric acid. It is then only necessary to dissolve the moist crystals in pure water, and recrystallize the acid to obtain a perfectly pure product. It is essential in both cases to cool the hot solution rapidly, with constant stirring, to obtain small crystals, for on cooling slowly large crystals are formed, which may inclose some of the mother liquor. Large quantities of oxalic acid purified in this way will volatize completely if heated in a platinum crucible, without leaving the slightest residue. The mother liquor can be employed for making oxalate of ammonia, for on neutralizing with carbonate of ammonia most of the oxalate is precipitated, it being much less soluble in a solution of chloride of ammonia than in pure water.—*Journal of Applied Chemistry, August*, 1874.

Hay Fever.—Dr. T. C. Hoover, of Bellaire, Ohio, in the *American Journal of the Medical Sciences*, relates his successful treatment of this curious disease,

so baffling to the profession. The first patient was a lady who had fits of sneezing which lasted several hours. She also had a slight cough, and suffered much at times from difficulty of breathing. The doctor makes the following solution: Chlorate of potash 20 grains, sulphate of morphia 4 grains, pure water 2 fluidounces; mix. He used this solution by means of an atomizer. Relief was instantaneous. Continued application kept the patient well for five days. Then the sneezing returned, and the doctor ordered the use of the following solution through the same instrument: Bromide of potassium one drachm, water two fluidounces. This also stopped the paroxysms. She was ordered to use these preparations alternately, from six to ten inhalations three times daily, or about one-fourth of a drachm. She continued to improve till she discarded the spray, being entirely well. Several other cases were similarly cured, some in a short time.—*Scientific American, Aug. 8th.*

Absorption of Oxygen and Emission of Carbonic Acid by Leaves Kept in Darkness.—MM. Deherain and Moisson.—(1) The quantity of CO_2 emitted increases with rise of temperature (as previously observed). At 7° 100 grms. of tobacco leaves gave in ten hours 0·031 gr. of CO_2; they gave 0·193 gr. at 18°, and 1·132 gr. at 41°. The increase varies with the species. It is greater, *e. g.*, with *Pinus pinaster* than with *Ficus elastica.* (2) The quantity of CO_2 emitted is comparable to that furnished by cold-blooded animals. Thus, taking Regnault and Reiset's data, frogs give in respiration weights of CO_2 much less than leaves of tobacco, mustard or sorrel. At 15° the respiratory activity of silkworms is comparable to that of caducous leaves observed at 30°, but notably greater than they manifest at 15° to 20°. (3) Leaves kept in the dark absorb more O than they emit CO_2. For example, 30 grms. of leaves of *Pinus pinaster* absorbed in twenty-four hours 7·7 c.c. of O, and emitted only 3·9 c.c. of CO_2. The effect is most sensible at low temperatures. The branches of some fatty plants (*Agave, Opuntia*) sometimes absorb O without emitting CO^2. The O fixed is utilized for formation of vegetable acids. (4) Leaves continue to emit CO_2 in an atmosphere deprived of O. The resistance to asphyxia is various. Pine leaves continue four or five days to emit CO_2, while those of tobacco, sorrel, *Ficus elastica, Begonia,* soon wither. (5) Hypothesis on the physiological utility of the internal combustion produced in leaves. Obscure heat is peculiarly favorable to energy of respiration, and there seems to be, between rapidity of growth and energy of respiration, a connection which may be understood if we suppose that a certain quantity of heat must be called into action in order that the immediate principles may form. The internal combustion, shown by absorption of O and emission of CO_2, is the origin of a part of the heat necessary to elaboration of new immediate principles.—*Chem. News, June* 12, from *Compt. Rend.*

Jalap Biscuits.—M. Tambureau, a pharmacien residing at Guelma, Algeria, publishes the following directions for the preparation of biscuits containing the

resin of jalap, which he says are of good appearance, and have an agreeable taste:

Pure Jalap Resin	56 grams.
Powdered Sugar and Flour	1000 "
Tincture of Vanilla	10 "
White of Egg	No. 20
Yolk of Egg	No. 40

Emulsify the resin with the egg yolks, add successively the sugar, tincture, and flour, and make a homogeneous paste, into which thoroughly incorporate the egg-whites previously beaten up. Divide the mass into 144 biscuits.—*Pharm. Journ. and Trans., June* 20, 1874.

Bleaching Bones and Ivory.—Bleaching is effected by exposure to the sun for three or four days in tanks filled with oil of turpentine. The objects must be supported on zinc stages at the height of a few millimetres above the bottom of the tanks.—*Chem. News, July* 17, 1874, from *Les Mondes.*

Davy's Artificial Ivory.—This substance, being made by the action of a mixture of sulphuric and nitric acids upon cotton and linen rags, must consist in part of nitro-cellulose, better known as gun cotton. Articles made of it may, therefore, prove dangerous under a variety of possible circumstances.—*Chem. News, July* 3, 1874.

Pharmaceutical Colleges and Associations.

Philadelphia College of Pharmacy.—The Board of Trustees, at a recent meeting, has resolved to make the abbreviation for graduate in pharmacy *Ph. G.*, and *Ph. M.* for master in pharmacy.

In the Massachusetts College of Pharmacy, the chairs of Materia Medica and Botany, and of Chemistry, became vacant by the resignation of Professors Tracy and Babcock. W. P. Bolles, M. D., and J. M. Merrick have been elected in their places.

Rhode Island Pharmaceutical Association.—The registered pharmacists of Rhode Island, after several preliminary meetings, finally organized, in Providence, on Saturday, July 25th, by the adoption of a Constitution and By-laws, and the election of the following officers: President, A. L. Calder, Providence; Vice-President, James H. Taylor, Newport; Secretary, Norman N. Mason, Providence; Treasurer, W. E. Anthony, Providence; Executive Committee, A. H. Field, F. J. Phillips and W. B. Blanding, of Providence.

The President was authorized to appoint delegates to the next meeting of

the American Pharmaceutical Association, after which the Society adjourned until the second Monday in October.

New York College of Pharmacy.—The Board of Pharmacy has, in June and August, examined forty-nine persons, of whom thirty-one passed satisfactorily.

The New Jersey Pharmaceutical Association held its summer meeting at the Mansion House, Long Branch, August 12th; Mr. R. Rickey, of Trenton, presided, and Dr. E. P. Nichols, of Newark, acted as Secretary. The Committee on Legislation reported that the pharmacy bill had passed both Houses of the Legislature (see page 137 of March number), but after the departure of the Committee, was again called up, reconsidered and laid upon the table, and thus failed to become a law. An act of incorporation was passed, and approved on February 18th last; the consideration and adoption of this charter was laid over to the regular annual meeting in February next. Wm. Neergaard, M.D., of New York, was elected honorary member of the Association. After the election of members and the transaction of some routine business, the Association adjourned.

The Indianapolis Pharmaceutical Association was organized July 30th, by the election of the following officers: President, Eli Lilly; Vice Presidents, George W. Sloan and John B. Dell; Recording Secretary, Charles Dennis; Corresponding Secretary, Ross W. Perry; Executive Committee, Messrs. Bowen, Sloan and Jos. R. Perry.

According to the constitution, any druggist or apothecary, who has been established in business not less than four years, is eligible for membership, provided he had been in no way interested in the manufacture of any nostrum, or so-called patent medicine, and has a good moral character and business integrity. The Association, we hope, will be represented at the next meeting of the American Pharmaceutical Association.

The Chicago College of Pharmacy has published, with the Eighth Annual Announcement of Lectures, the Constitution and By-laws, and a list of the contributions to its library and cabinet from October, 1871, to January, 1874. We are glad to observe that these contributions have been quite numerous and valuable.

The Pharmaceutical Society of Paris met July 1st, M. Planchon in the chair. A communication from D. Phollides, of Bucharest, was read, advocating the making of suppositories by hand; also a paper by M. Carles, of Bordeaux, on reduced iron, and on the employment of a standardized solution of iodine to ascertain its purity. M. Bussy has determined the amount of metallic iron by dissolving the reduced iron in sulphuric acid, and measuring the resulting hydrogen.

A new process for the preparation of crystallized digitalin was described in

a paper by M. Nativelle. A note on the falsification of dragon's blood was communicated by M. Brétet; investigation son the density of cholesterin, by M. Méhu; a process for the preparation of cinchona wine, and the estimation of the alkaloids contained in it, by Ferd. Vigier.

M. Boudet read his report, which is intended as the preface of the International Pharmacopœia, which was freely discussed, after which the Society elected M. Méhu as delegate to the International Pharmaceutical Congress at St. Petersburg.

Editorial Department.

The Next Meeting of the American Pharmaceutical Association, to judge from the accounts received by us from different sections of the country, will not fall behind the preceding ones, either in point of numbers or in the interest attached to it through the reading of papers, the discussions and the exhibition of pharmaceutical objects. The meetings held during the last few years have abundantly proven, that it is not absolutely necessary that business objects should call the members into those sections of the country in which the meetings are being held; a fair atttendance may usually be expected from those having the good of the profession at heart, and the meetings occurring at a time, when the majority of members are not confined to their homes by the pressure of business, the certainty of meeting many friends and acquaintances of former years, who are actuated by similar motives, will always surround these annual gatherings with attractions and enjoyments which are not easily, if at all, met with at places of recreation, where the business man, after a season of toil, seeks a short period of quiet and the restoration of mental and bodily vigor. During the last few years, death has forevever sealed the lips of several prominent members, who rarely missed the opportunity of meeting their brother pharmacists in friendly counsel, and as time rolls on, others will follow them to their last resting places. But it is to be expected that their places will be filled by others equally animated by the desire of assisting in the progress of the profession of their choice.

The arrangements made for the next meeting have been noticed in detail on page 395 of our last number, and we merely have to mention, in addition thereto, that the Chesapeake and Ohio R.R. will sell tickets to and from Cincinnati at $25 from Richmond, Va., and at $26 from Washington, D. C., for the round trip. It is contemplated that a party of the visiting members from the Atlantic States will return by the same line, and it is expected that a sufficient reduction of fare will be secured to induce many to chose that route, which offers many attractions and passes through a country replete with historical interest.

Numerous applications for space in the exhibition room have been received by the local Secretary, and it is to be hoped that all goods will arrive in due

time, so that the exposition may be fully opened before the organization of the meeting.

Centennial of Chemistry.—On the first of August, 1774, Joseph Priestley discovered *dephlogisticated air*, which afterwards received the name of oxygen, and on the same day, in 1874, a number of chemists assembled at his grave in Northumberland, Pa., and at his former home in Birmingham, England, to do homage to the memory of a man who, during his entire lifetime, waged war against ignorance and battled for what he considered to be right and truth. His chemical investigations were mostly confined to the discovery of most of the important gases, and although, from his limited knowledge of general chemical laws, his observations were, in his own hands, not productive of the important theoretical results, yet they formed the basis upon which the superstructure of modern chemistry has been erected, and in this light the birth of chemistry may well be dated from the discovery of oxygen, an honor which Priestley shares with his celebrated cotemporary, Scheele, then an apothecary's assistant at Upsala, Sweden, but whose investigations were not published until 1777.

On the evening of July 30, a number of chemists from different parts of the United States and Canada reached the quiet borough of Northumberland, and more came the following morning, until about seventy five had arrived. The town is beautifully situated at the conflux of the two branches of the Susquehanna river and at the foot of the Montour range of mountains. During the celebration, business was almost completely suspended, music was freely discoursed by an amateur brass band, and the visitors met with a hearty reception on the part of the citizens, many of whom opened their houses for the hospitable entertainment of the strangers.

The meetings were held in the spacious hall of the school-house, and were largely attended by the inhabitants of Northumberland and the neighboring towns. The first meeting was held Friday, July 31, at 9 o'clock, A. M., and was called to order by Professor E. M. Horsford, who nominated as temporary chairman, Prof. H. C. Bolton, of Columbia College, who had first suggested this celebration. After prayer had been offered by Rev. Pynchion, a nominating committee was appointed and the meeting finally organized by the election of Prof. C. F. Chandler, of New York, President; Prof. R. A. Leeds, Secretary; and Prof. W. H. Chandler, of Bethlehem, Pa., Treasurer. Among the Vice-Presidents elect, was Miss Rachel L. Bodley, Professor of Chemistry in the Woman's Medical College of Philadelphia, who had first suggested to hold this meeting in the village containing the last home and grave of Priestley; the lady was not present, but, by previously made arrangements, was absent on a botanical tour to Colorado. Colonel David Taggart, on behalf of the citizens of Northumberland, in a brief but happy speech, extended a sincere welcome to the visitors, to which the President made a short reply. A committee consisting of Messrs. Frazer, Sharpless and Wheeler, was appointed to communicate with the centennial meeting at Birmingham, and on motion of Professor J. L. Smith, another committee, consisting of Messrs. Smith, Youmans and Joy, to

represent in spirit the American chemists at the unveiling of Priestley's statue in England. The following telegram was sent to England:

"Northumberland, Penn., July 31, 1874.

"The brother chemists at the grave to their brothers at the home of Priestley, send greeting on this centennial anniversary of the birth of Chemistry."

Near the close of the session, the following dispatch was received and read:

"*The American Chemists assembled at Northumberland, Penn.:*

"Our marble statue, representing Priestley discovering oxygen, will be unveiled to-morrow, presented by the subscribers, through Prof. Huxley, to the town, and accepted by the Mayor. We greet you as colleagues in honoring the memory of a great and good man.

"The Priestley Memorial Committee, Birmingham, Eng."

Prof. Smith advocated a resolution providing for a meeting of chemists in Philadelphia during the year 1876, and for the appointment of a committee to confer with the Centennial Commission with the view of adopting measures providing for the visit of the European chemists to this country, on the occasion of the contemplated meeting. The Committee was announced as follows: Prof. J. L. Smith, T. Sterry Hunt, C. A. Joy, J. W. Mallet, R. A. Leeds, E. M. Horsford, H. C. Bolton, B. Silliman and W. Gibbs.

An excellent address upon the life and labors of Dr. Joseph Priestley was delivered by Prof. H. H. Croft, of Toronto, after which Prof. Horsford exhibited and read extracts from many letters written by the philosopher to George Thatcher, member of Congress, and which are in the possession of the Massachusetts Historical Society; also a copy of the Proceedings of the Columbia Chemical Society, of Philadelphia, from the beginning of the present century, with which Priestley had been in correspondence. Afterwards the meeting adjourned, and the company proceeded to the mansion built by Dr. Priestley on the banks of the North Branch of the Susquehanna, and overlooking for some distance the picturesque valley of that river. With the exception of the observatory, which has been removed, the building stands pretty much with the same arrangements as at the close of last century; adjoining it is an outhouse which was used by the great philosopher as a laboratory, the brick furnace being partly in ruins.

At the residence of Mr. Jos. Bird, on Market street, was displayed the "Loan Cabinet," containing the works, some manuscripts and many apparatus used by Dr. Priestley, and remaining in the possession of the family; also other curious apparatus, engravings, &c., which had been loaned for the occasion from different parts of the country.

Before the second session several photographs of the visitors and local committee were taken in front of the "Loan Cabinet;" and subsequently, at the school-house, an able address was given by Prof. T. S. Hunt, reviewing, in a lucid and thorough manner, the century's progress in theoretical chemistry.

The following dispatch to Birmingham was read:

"Welcome dispatch received. Profs. J. L. Smith, Youmans and Joy were

appointed a committee to represent us in spirit at the unveiling of Priestley's statue."

A report of the Finance Committee and the appointment of a Committee of Five consisting of Profs. Bolton, Smith, Silliman, Horsford and Hunt, to co-operate with the American Association for the Advancement of Science in establishing the chemical section on a firmer basis, closed the labors of the second session.

Prof. Jos. Henry, of Washington, had consented to deliver an address at Priestley's grave; but, he being unable to attend, Prof. H. Coppee, of Bethlehem, Pa., stepped into his place, and at 6½ P. M., in the presence of a large assemblage, delivered an eloquent discourse upon the aims and objects of the life of him whose mortal remains rested near, on the hillside overlooking a beautiful panorama of the narrow valley of the Susquehanna.

At 8 o'clock in the evening, a review of the century's progress was given by Prof. Smith; and on "Oxygen Day," August 1st, an essay on American Contributions to Chemistry, by Prof. Silliman. Both addresses were full of interest, but the design was rather on too extensive a basis, and many important points could, therefore, receive but a passing notice, or had to be omitted altogether.

After a report of the Finance Committee, the presentation of the autographs of the visitors to the descendants of Jos. Priestley, and the adoption of resolutions of thanks to the citizens of Northumberland, a motion to adjourn was unanimously amended "to meet Aug. 1, 1974," and an invitation extended to all present to be in attendance.

It deserves to be mentioned that the chairman of the Local Committee was Joseph Priestley, M. D., a great-grandson of the philosopher, the centennial anniversary of whose important discovery was thus celebrated.

The Georgia Examining Board to regulate the licensing of physicians and druggists, which has been in existence since 1824, held a meeting at Atlanta, July 14, and registered twenty-three persons as druggists and apothecaries and one only as a pharmacist. We obtain this information from the *Southern Medical Record* for July, where, however, we find no explanation of the legal standing of the two classes mentioned. Mr. J. M. Clark, of Milledgeville, has been the pharmaceutical member of this State Board for a number of years past.

The Percentage Business, by which a physician obtains a certain proportion of the charges for prescriptions, has been repeatedly denounced as a species of dishonesty, and as a disgrace to the medical and pharmaceutical professions. It is not often that we find it alluded to in medical journals, and, therefore, we insert here with pleasure a portion of the timely remarks of the *Medical and Surgical Reporter*, in its issue of August 8th:

"Some definite and positive action ought to be taken by the medical societies of this country to discountenance and discourage the custom of receiving percentages from druggists on prescriptions sent them. Such action 'is not and cannot come to good.' It is a hardship to the druggist, because such percentages, in the nature of a commission on sales, do not enter into the

legitimate estimates of the retail drug business. It is a temptation to the physician to prescribe more frequently than he otherwise would, and thus defraud the patient by forcing him to make unnecessary purchases. It is a base advantage to take of a man of limited means, for he not only has to buy needless medicines, but also to pay more for them than he otherwise would.

"We have been told that medical societies will not take any steps in this matter, because, if not the majority, many very influential members practice this discreditable custom, and are bound to sustain it, or at least to shield it. Then let the Legislatures of the States enact laws forbidding it. This has been done in some parts of Europe, and severe penalties are incurred by those who violate these statutes."

The highwayman, who boldly steps up to his intended victim demanding his purse, is virtuous in comparison to those, who, sneak-like, rob the trusting customer, under the pretense of necessity for prescribing, and of fair and honest charges for the prescribed medicines. In our opinion, the apothecary who pays this filthy spoil is morally as culpable as the physician who exacts the booty; one acts as the agent for his master, and both being directly benefitted, it matters little which one is the decoy in any particular case. But what strikes us as deserving af particular attention in the above quotation is the charge against medical societies and many of their influential members. We hope that, although this corrupt practice may not be uncommon, it has no gained such dimensions as to be beyond the reach of the medical and pharmaceutical societies, and we must say that during a period of a quarter of a century we have had cognizance of but few cases of such collusion and extortion. Though laws bearing on this fraud can do no harm, and may, to some extent, serve to check it, yet we expect far better results from the united action of the societies of both professions, from an inculcation of the principles of professional honesty and fair dealing, and from a strict adherence to the adopted codes of ethics.

The Position of Colleges of Pharmacy towards Patent Medicines and Adulterations has been defined by Mr. Samuel M. Colcord, President of the Massachusetts College of Pharmacy, in a speech made to the Massachusetts Medical Society at the annual meeting held in June last. We quote from the *Boston Medical and Surgical Journal* the passages referring to the above subject, and commend them to the attention of our readers:

"We are endeavoring to raise pharmacy to the dignity of a profession. We believe it to be for the benefit of your profession and the public that this should be done. We believe that the drug business requires it; that great changes have taken place in it, of late years, but not the best changes. We believe that something better ought to greet the view of a customer upon entering a modern drug store than a marble monument suggestive of Mount Auburn, although filled with delicious beverages, or a case of Humphrey's homœopathic specifics, the sale of which is based upon the theory of *no cure no harm*. But the imposing feature of the store is *proprietary medicines*, in which form more than two-thirds of all the medicine in this country is dispensed. A demand has been made for them, and commercial apothecaries supply the demand. I have never had time to read the list of all the diseases they are said to cure, and I know of no disease they do not claim to cure. Still, I

never could quite understand the necessity of having so many kinds, as I have been positively informed by the discoverer of the original pain-killer that it was the best medicine ever discovered for every disease except worms, and as good for worms as anything else.

"Mr. President, I have stated that more than two-thirds of all the medicine sold in this country is in the shape of patent medicine or nostrums. You may infer, if you please, that this state of things exists from that universal law of *demand* and *supply*. I also stated that your Society or ours can do very little toward restraining or controlling traffic in this form; the great bulk of this business has been developed outside of, if not in opposition to, the drug business. The demand for nostrums is created by direct appeals or advertisements directed to physicians and the public, I may say, in spite of apothecaries aid or influence, although all apothecaries supply the demands upon them for these articles. And so great is the demand for them, that one proprietor, in answer to some inquiries I made of him a short time since, wrote to me that he paid the United States government $120,000 per annum for stamps alone. If you will multiply this amount by 25, it will give you the amount of his sales, retail value $3,000,000; and if you divide this amount by 3, it might, and probably does, give the yearly income of $1,000,000, which is more than all the profit on drugs sold in this city in the regular way.

"Now, the point I make is this: educate as many honest young men as you will, and let them know enough to be able to get the degree of graduate in pharmacy from the Massachusetts College of Pharmacy, and no one of them ever will, or can, become a successful nostrum proprietor. And this is the policy we, as a college, are pursuing; we attend to our own business, do our work faithfully, and educate our young men not only to do the same, but to look after the men and medicines that are not up to the standard quality, for our own and our customer's protection and benefit, and do not propose for the present to keep houses of reformation for our neighbors or do police duty."

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Nouveaux Eléments de Pharmacie. Par A. Andouard, Pharmacien, Professeur de Chimie a l'Ecole de Médecine et de Pharmacie de Nantes. Paris: J. B. Baillière et Fils, 1874. 1 vol. in 8vo de xxiv—884 pages avec 120 figures intercalées dans le texte. 14 francs.

New Elements of Pharmacy. By A. Andouard, Pharmacist and Professor of Chemistry, &c.

The work is divided into twenty-eight chapters, the first of which treats of the pharmaceutical manipulations, which, though occupying only forty-three pages, are well described, and a number of apparatus and simple contrivances are mentioned and illustrated which are but little known in this country. From our standpoint, we find the paragraph on percolation, which is treated under lixiviation, too short; but it is well to remember that this process has nowhere received the attention and patient investigation which has been accorded to it on this side of the Atlantic.

The following five chapters treat of the mineral medicaments, namely, elements, neutral bodies (water and nitrous oxide), mineral acids, alkalies and metallic oxides, salts, which latter are arranged according to their acids. The

organic medicaments are considered upon one hundred and sixty pages, in four chapters, as organic acids, vegetable alkalies, salts and neutral bodies.

Part II of the work is entitled "Medicaments of complex and often little definite chemical composition." It opens with well-written remarks upon the choice, collection, drying and conservation of drugs, which are followed by the galenical preparations, grouped together as follows: Simple (animal and vegetable) and compound powders; pulps; juices (animal juices = animal fats, wax, milk, honey; and vegetable juices, comprising the various vegetable exudations, fats and volatile oils); species (espèces), a form of preparations but little used in this country; medicaments prepared with water, comprising infusions, decoctions, mucilages, distilled waters, aqueous extracts, syrups, honeys, electuaries, pastes, conserves, jellies, troches, draughts, emulsions, gargles, injections, collyria, lotions, baths, cataplasms, &c.; medicaments prepared with alcohol (spirits, tinctures and alcoholic extracts); medicaments prepared with glycerin, ether, fats, essences, wine, vinegar and beer; pills; capsules; liniments; fumigations.

Although in some instances objection may be made as to the correctness of the classification adopted by the author, yet it will be found that the arrangement, once understood, is quite convenient, so that the work may be readily consulted with convenience, which is increased by a good index.

We regard the work as a good exposition of pharmacy as practiced in France, and find its scientific information up to the time of publication. It will prove of great value to those of our readers who desire to familiarize themselves with French pharmacy, or who are in localities where they have occasion to put up the prescriptions of French physicians, since it contains not only the preparations officinal in the Paris Codex, but likewise those unofficinal ones which are used to some extent in France.

The book is handsomely printed, upon good paper, and is illustrated with 120 well-executed cuts.

The Hot Springs as they are. A history and guide. By Charles Cutter. Little Rock, Ark.: W. H. Windsor, Printer, 1874. 8vo, pp. 88.

This pamphlet aims to show the advantages of the Hot Springs of Arkansas, and to give such information as will be interesting and valuable to the tourist, as well as to the invalid visiting the springs for the recovery of his health.

The Student's Guide to Materia Medica in Accordance with the latest issue of the British Pharmacopœia. By John C. Thorogood, M. D., Lond., Lecturer on Materia Medica at the Middlesex Hospital. Philadelphia: Lindsay & Blakiston, 1874. f. cap. 8vo, pp. 318.

Intended as a supplement to the Pharmacopœia in the student's hand, the object of the little volume is mainly to give an account of the chemical composition of medicines, and of their effects and uses, and to explain briefly the chemistry of the various processes and of the reactions which occur in applying tests. The work is divided into two parts, Part I being entitled "Inorganic

Materia Medica," and comprising the various elements and their inorganic compounds, together with ethylic and amylic alcohols, their derivatives, creasote and carbolic acid; the other organic chemicals are treated in connection with the crude drugs from which they are derived.

Part II, Organic Materia Medica, comprising about one-half of the work, is arranged according to De Candolle's botanical system, and closes with the drugs derived from the animal kingdom, similarly arranged in natural classes. Descriptions of drugs are, as a rule, not given, the author referring to the characteristics as mentioned in the British Pharmacopœia, which authority is likewise adhered to in the galenical preparations. The chemistry and medicinal properties and uses are clearly described, and will be found useful also to the American student, although for him the value of this guide is seriously affected by the total neglect of the drugs and preparations peculiar to the United States Pharmacopœia. As a guide to the Materia Medica of the British Pharmacopœia, and if used in connection with the latter, the work fulfils its object.

Nomenclature of Diseases, prepared for the use of the Naval Officers of the United States Marine-Hospital Service, by the Supervising Surgeon, John M. Woodworth, M. D. Washington: Government Printing Office, 1874. 8vo, pp. 210.

This is the classification and English-Latin terminology of the provisional nomenclature of the Royal College of Physicians, of London, which has been adopted by the U. S. Marine-Hospital Bureau as the nosological system to be observed by medical officers of the service in their reports and communications, and is also intended for the guidance and information of others not concerned with the professional details of the service.

Circulars of Information of the Bureau of Education, No. 1. 1874. Washington: Government Printing Office, 1874. 8vo, pp. 77.

The pamphlet contains the Proceedings of the Department of the Superintendence of the National Teachers' Association, a meeting of which was held at Washington, in January last. As one of the subjects considered was the manner in which education shall be represented at the Centennial Exposition, in 1876, this circular claims the prompt attention of all educational institutions in the United States.

Cincinnati Industrial Exposition; Rules and Premium List of the Fifth Exposition. 1874. 8vo, pp. 54.

This Exposition commences September 2d and closes October 3d.

Exhibition of the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts. Rules and Regulations with address of the Board of Managers, 1874.

This Exposition will be open from October 6th until October 31st.